

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-306144

(43)Date of publication of application : 28.11.1997

(51)Int.Cl.

G11B 23/40

G11B 7/00

G11B 7/24

(21)Application number : 08-121679

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(22)Date of filing : 16.05.1996

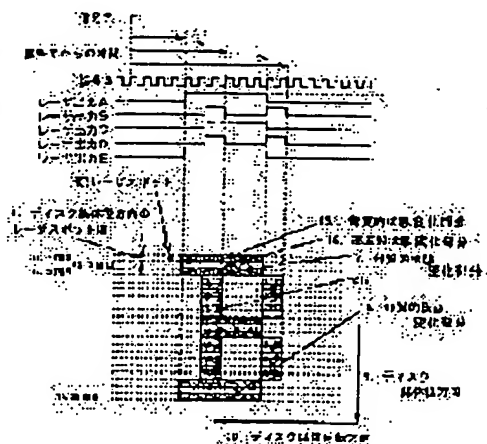
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(54) OPTICAL DISK SURFACE PRINTING METHOD AND OPTICAL DISK DATA DELETION
DEVICE USING RELEVANT PRINTING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To print visibly a character
sign on an optical disk surface.

SOLUTION: This method used an optical head radiating
laser spot light, a carriage moving the optical head in the
radial direction 19 of the disk, an optical disk output
control part controlling the output of the optical head, a
character conversion functional part converting an
optional character sign to be printed on the surface of
the optical disk to the rotation angle of the optical disk
and the output value of the laser spot light of the optical
head and a rotation angle detection part detecting the
rotation angle of the optical disk. Then, the rotation
single of the optical disk is detected by the rotation angle
detection part, and the optional character sign is printed
on the optical disk surface by the optical head while detecting the rotation angle by the
rotation angle detection part based on the rotation angle of the optical disk and the output
value of the laser spot light of the optical head for printing the optical characterizing obtained
from the character conversion functional part. Further, an optical disk data deletion device is



formed using the above.

LEGAL STATUS

[Date of request for examination] 08.11.2001

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3467575

[Date of registration] 05.09.2003

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The optical head which is the optical disk side printing approach for printing the literal notation of arbitration to an optical disk side, and irradiates the laser spot light of the configuration over two or more trucks at the optical disk with which the truck which recorded data was formed spirally, The carriage which moves this optical head to radial [of an optical disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the spindle motor which carries out the rotation drive of said optical disk, and the arbitration which prints on the front face of said optical disk, The detecting element which detects the angle of rotation of the truck with which the laser spot of said optical disk is irradiated, and this truck is used. Said detecting element detects the angle of rotation of the truck of the rotating optical disk, and this truck with a spindle motor. The angle of rotation of the truck of an optical disk for said optical head output-control section to print the literal notation of the arbitration obtained from the transliteration function part, and this truck to origin The optical disk side printing approach characterized by printing the literal notation of arbitration on an optical disk front face by the optical head while a detecting element detects a truck and an angle of rotation.

[Claim 2] It is the optical disk data eraser which initializes the record film of elimination or an optical disk for the data recorded on the spiral truck of an optical disk by laser radiation. The optical head which irradiates the laser spot light of the configuration over two or more trucks at the optical disk with which the truck which recorded data was formed spirally, The carriage which moves this optical head to radial [of an optical disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the spindle motor which carries out the rotation drive of said optical disk, and the arbitration which prints on the front face of said optical disk, It has the detecting element which detects the angle of rotation of the truck with which the laser spot of said optical disk is irradiated, and this truck. While initializing the record film of elimination or an optical disk, the data with which said optical head irradiated the laser spot light of the configuration over two or more trucks, and was recorded on the optical disk by the spiral truck of an optical disk Said detecting element detects the angle of rotation of the truck of the rotating optical disk, and this truck with a spindle motor. The angle of rotation of the truck of an optical disk for said optical head output-control section to print the literal notation of the arbitration obtained from the transliteration function part, and this truck to origin The optical disk data eraser characterized by printing the literal notation of arbitration on an optical disk front face by the optical head while a detecting element detects a truck and an angle of rotation.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the optical disk data eraser which uses this printing approach for the optical disk side printing approach list which starts the optical disk data eraser which used the optical disk side printing approach and this printing approach, especially prints the literal notation of arbitration by laser spot exposure on the surface of an optical disk, can initialize elimination of optical disk data, or the record film of an optical disk, and can print the literal notation of arbitration possible [viewing] on the surface of an optical disk.

[0002]

[Description of the Prior Art] The magneto-optic disk which the direction of a field of a recording surface is changed when an optical disk generally irradiates laser spot light at a recording surface, and records data, the phase change record optical disk which a recording surface makes carry out a phase change, and records data by irradiating laser spot light, the write-once (only one record) mold optical disk which forms the hole physically called a record pit to a recording surface by laser spot light, and records data are known. It is performed that these optical disks print information besides the class and manufacturer name of an optical disk directly on the front face at printing or a record film generate time according to an ink jet etc. so that a user can be viewed at record film.

[0003] On the other hand, having the function which initializes the record film of the function which eliminates the once written-in optical disk data at a high speed, or an optical disk is known by forming continuously many holes called performing an optical disk data eraser irradiating a laser spot on a write data according to various kinds of above mentioned optical disk classes, and changing the direction of a field of a recording surface, or the phase change of a recording surface, or a pit. On these specifications, it shall be called an optical disk data eraser also including the equipment which performs initialization of the equipment and record film which perform said data elimination. Moreover, in order that this optical disk data eraser may perform data elimination at a high speed, irradiating the laser spot over two or more trucks is performed.

[0004] In addition, as reference with which the technique about the class and optical disk unit of these optical disks, or an optical disk data eraser was indicated, metaphor JP,02-42661,A and JP,03-280221,A are mentioned and Japanese Patent Application No. No. 260412 [06 to] is mentioned as a technique for which the applicant applied previously.

[0005]

[Problem(s) to be Solved by the Invention] The optical disk unit and optical disk data eraser by said conventional technique were a thing without the function printed so that a user can view the information besides a data name / record person name / date / copyright notice recorded on the optical disk front face which initializes record film in the store and elimination list of data to an optical disk, and was described above in them.

[0006] therefore, conventionally, equipment had the fault which sticks the label which wrote information by hand at this on the label stuck on the cartridge which cannot print new information, such

as contents / file name / date of the information recorded on these rewritable optical disks, on an optical disk front face, for example, contains an optical disk, or printed /information and which is referred to as not becoming, when there was nothing.

[0007] Moreover, for printing these information on an optical disk front face, the printer of dedication, such as an ink jet printer for optical disks, needed to be prepared, and it needed to print using this dedicated device, and these printers had constraint in the magnitude and the location of a printing character, and there was also fault said that a literal notation is nonprintable in the magnitude and the location of arbitration. Moreover, when said dedicated device was used, there was also fault said that correction modification of the literal notation already printed is difficult by the above-mentioned constraint.

[0008] The purpose of this invention is removing the fault by said conventional technique, and is providing the location of arbitration with the optical disk data eraser using the optical disk side printing approach and this printing approach of enabling viewing of a literal notation etc. easily in the size of arbitration on the surface of an optical disk.

[0009]

[Means for Solving the Problem] In order to attain said purpose, the optical disk side printing approach by this invention The optical head which irradiates the laser spot light of the configuration over two or more trucks at the optical disk with which the truck which recorded data was formed spirally, The carriage which moves this optical head to radial [of an optical disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the spindle motor which carries out the rotation drive of said optical disk, and the arbitration which prints on the front face of said optical disk, The detecting element which detects the angle of rotation of the truck with which the laser spot of said optical disk is irradiated, and this truck is used. Said detecting element detects the angle of rotation of the truck of the rotating optical disk, and this truck with a spindle motor. The angle of rotation of the truck of an optical disk for said optical head output-control section to print the literal notation of the arbitration obtained from the transliteration function part, and this truck to origin While a detecting element detects a truck and an angle of rotation, it is characterized by printing the literal notation of arbitration on an optical disk front face by the optical head.

[0010] Moreover, the optical disk data eraser by this invention The optical head which irradiates the laser spot light of the configuration over two or more trucks at the optical disk with which the truck which recorded data was formed spirally, The carriage which moves this optical head to radial [of an optical disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the spindle motor which carries out the rotation drive of said optical disk, and the arbitration which prints on the front face of said optical disk, It has the detecting element which detects the angle of rotation of the truck with which the laser spot of said optical disk is irradiated, and this truck. While performing elimination or initialization of record film, the data with which said optical head irradiated the laser spot light of the configuration over two or more trucks, and was recorded on the optical disk by the spiral truck of an optical disk Said detecting element detects the angle of rotation of the truck of the rotating optical disk, and this truck with a spindle motor. The angle of rotation of the truck of an optical disk for said optical head output-control section to print the literal notation of the arbitration obtained from the transliteration function part, and this truck to origin While a detecting element detects a truck and an angle of rotation, it is characterized by printing the literal notation of arbitration on an optical disk front face by the optical head.

[0011]

[Embodiment of the Invention] Hereafter, the optical disk data eraser using the optical disk side printing approach and this printing approach by one example of this invention is explained to a detail with reference to a drawing. Drawing showing the time timing of a signal for drawing 1 to explain the optical

disk side printing approach by this operation gestalt and the condition of a disk membrane surface, drawing in which drawing 2 shows the outline configuration of the optical disk data eraser to which this optical disk side printing approach is applied, and drawing 3 are the flow chart Figs. for explaining actuation of this optical disk data eraser. in addition, the "literal notation" which state on these specifications be restrict to a usual alphabetic character and a usual notation, and explain further change into the condition that people can recognize a literal notation as a result also [else / graphic form / the mark of arbitration, or] as what be include by the approach besides that "printing" be make it possible [viewing of a literal notation] for people on an optical disk front face, and change partially the reflection factor on the front face of a disk by laser spot exposure / stamp.

[0012] First, the optical disk data eraser to which the optical disk side printing approach by this operation gestalt is applied is explained with reference to drawing 2 . The spindle motor 24 turning around the disk media 21 this optical disk data eraser of whose is an optical disk, The rotary encoder 23 which is directly linked with the revolving shaft of this spindle motor 24, and detects the angle of rotation of this motor, The optical head 29 which prints the literal notation which irradiates the laser spot 30 on said disk media 21, and is later mentioned in elimination of data, or the initialization list of record film, The carriage 26 which supports this optical head 29 movable to the disk radial 25, The carriage motor 27 which drives this carriage 26 to radial [25], The linear scale 28 which detects the amount of radius directional movements of said carriage 26, The base 22 which supports these devices, and the spindle control section 31 which controls rotation of said spindle motor 24, The carriage control section 32 which drives said carriage motor 27 and controls migration of carriage 26, The automatic focus control section 33 which performs automatic-focusing control of the laser spot to the disk side of said optical head 29, The laser output-control section 34 which controls the output value of the laser spot 30 of said optical head 29, It has the microprocessor 35 including the transliteration function 36 later mentioned while controlling said two or more control sections, and it is constituted so that the literal notation on the front face of a disk may be printed with the directions from the high order controller 37 in data elimination of disk media 21, or the initialization list of record film.

[0013] that to which said rotary encoder 23 outputs the signal Z for every one disk revolution, and the signal A according to an angle of rotation (pulse signal) by rotation of the predetermined include angle of a disk synchronizing with rotation of a spindle motor 24 -- it is -- this -- the spindle control section 31 -- angle of rotation of disk media 21 -- being detectable -- a part of this rotary encoder 23 and spindle control section 31 -- a configuration is equivalent to a detecting element. Moreover, by outputting a pulse signal for every predetermined distance migration synchronizing with straight-line migration of carriage 26, and the carriage control section's 32 detecting the movement magnitude of carriage 26 and the optical head 29 by this, and detecting the time interval of this pulse, the linear scale 28 also detects the passing speed of carriage 26, and it is constituted so that the location of carriage and speed control may be performed using these information.

[0014] Furthermore, the automatic focus control section 33 feeds back the return light reflected from disk media 21, by [from which the diameter of a laser spot on the disk media 21 of the laser spot 30 irradiated from the optical head 29 does not change] controlling like, follows in footsteps of the deflection [the face deflection or the deflection] of disk media 21, and performs automatic-focusing control of the laser spot 30. Moreover, the laser output-control section 34 is controlled to irradiate a laser beam from the optical head 29 according to data elimination, initialization of record film, or actuation of printing with the laser output width of face and arbitration pulse separation of arbitration. Moreover, while a microprocessor 35 controls said spindle control section 31, the carriage control section 32, the automatic focus control section 33, and the laser output-control section 34 and controls printing actuation of a literal notation in data elimination actuation or the initialization list of record film The printing information (information on a printing character notation, size, a location, etc.) directed from the high order controller 37 to origin The transliteration function (section) 36 to change this printing character notation into data BARUSU and exposure timing according to an angle of rotation of the truck of the disk media for printing to disk media 21 and this truck is included.

[0015] Next, the principle of printing actuation of the literal notation using this optical disk data eraser is

explained with reference to drawing 1. The signal A outputted in about 1000 pulse signals during the signal Z outputted for every disk rotation to which drawing 1 is outputted from said spindle control section 31, and disk 1 rotation Laser output A-E for every truck irradiated from an optical head according to these signals, It is drawing showing the section qualitative change-of-state part (part which forms a literal notation) for every truck stamped on a disk-media side by this laser radiation, and what prints an alphabetic character "B" on a disk front face is illustrated in this example. Moreover, in the example of drawing 1, one side of one Dodd 21 who constitutes a literal notation carries out to the width of face 1 3 times the die length of a laser spot, and these dots 21 form one character by 7 dots long and 5 dots wide.

[0016] Now, the printing approach by this operation gestalt is controlled to draw the spiral locus to which the laser spot 30 met the truck by [which do not lap with the location through which rotated disk media 21 and the laser spot 30 passed once] moving the optical head 29 to the disk radial 25 like. The pulse number of Signal A is counted on the basis of the signal Z produced for said every disk rotation at this time, and according to this number of counts, the optical head 29 outputs laser output A-E for every truck, and, thereby, irradiates the laser spot 30. For example, laser output A is used as a signal for forming the straight-line part on an alphabetic character "B" in the 1 - 3rd (agreements 11-13) round of a truck. If it states concretely, laser output A will form the oblong section qualitative shift part 15 of a truck which continued by 11 1st round, and will form 2 round 12 of a truck, and the oblong section qualitative shift parts 16 and 17 which 13 followed similarly 3rd round. The section qualitative shift part 21 which had spacing in between by laser output B in the truck following this is formed. Furthermore, it is used as a signal for [of a truck] forming the straight-line part under an alphabetic character "B" in 14 21st round, and the oblong section qualitative shift part 18 which continued by laser output E is formed. By making the output of the laser spot 30 high, a recording surface becomes an elevated temperature, a membranous section qualitative condition changes, and these sections qualitative shift part changes so that it can distinguish from the part by which the laser spot 30 of low-power output was irradiated in visible. For example, it changes so that it can distinguish in visible by a difference of a reflection factor or opening. Therefore, in the literal notation of arbitration, and the example of drawing 1, an alphabetic character "B" can be formed by the assembly of a these sections qualitative change-of-state part.

[0017] Next, this the optical disk data eraser whole outline of operation is explained with reference to drawing 3. When performing initialization by the usual data elimination, carrying in disk media 21 first, clamping to a spindle motor 24 (steps 38-39), driving a spindle motor 24 subsequently, and rotating disk media 21, this optical disk data eraser starts the exposure of the laser spot 30 by the optical head 29, and performs the automatic focus of this spot (steps 40-42). When initializing optical disk record film here, all trucks are initialized moving carriage 26, carriage migration and halt (steps 44-45) of luminescence of a laser spot, halt (step 46) of rotation of disk media 21, disk clamp discharge (step 47), and discharge (step 48) to the exterior of disk media are performed one by one, and processing is suspended.

[0018] When this equipment prints the literal notation of arbitration, here The literal notation directed from the high order coat roller 37 when performing step 43 of said carriage migration by the transliteration function (section) 36 of a microprocessor 35 This printing character notation is changed into data BARUSU and exposure timing according to an angle of rotation of the truck of the disk media for printing to disk media 21, and this truck based on printing information (information on a printing character notation, size, a location, etc.). The laser output value of the optical head 29 is controlled, a literal notation is printed, detecting carriage migration and disk angle of rotation, (step 50), and disk media are discharged according to steps 44-48.

[0019] Thus, the optical disk side printing approach by this operation gestalt can do ** which prints the literal notation of arbitration to an optical disk side by Signal's A detecting angle of rotation of this truck, while Signal Z detects the truck of an optical disk, and irradiating a laser spot according to said angle of rotation for every truck. Moreover, the optical disk side printing approach by this operation gestalt can do ** which prints easily the literal notation of a high speed and the size which can be viewed to an optical disk side by having applied to the optical disk data eraser which has a large laser spot compared with the time of the laser spot over two or more trucks, i.e., record playback, in data

elimination. Furthermore, since this optical disk side printing approach is printable in the range which can irradiate a laser spot, it can print a literal notation in the location of arbitration. In addition, this printing approach may be applied to the optical disk unit which performs the usual record playback.

[0020] Moreover, the optical disk with which this invention is applied can be applied to a magneto-optic disk, a phase change record optical disk, a write-once mold optical disk, etc., and, as for the laser output value in this case, it is desirable to set up according to the property of each optical disk. For example, it is possible to set up the laser output value which is extent which the reflection factor on the front face of an optical disk replaces with the business which can be viewed in a magneto-optic disk, to set up the laser output value which is extent which changes the reflection factor on the front face of an optical disk by the phase change in a phase change record optical disk, and to set up the laser output value of extent which stamps the diameter of a laser spot deeply continuously greatly in order to carry out opening physically in a write-once mold optical disk.

[0021]

[Effect of the Invention] As stated above, the optical disk side printing approach by this invention The optical head which irradiates the laser spot light of the configuration over two or more trucks at an optical disk, The carriage which moves this optical head to radial [of a disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the arbitration printed on the front face of said optical disk, Said angle-of-rotation detecting element detects the angle of rotation of the rotating optical disk with a spindle motor using the angle-of-rotation detecting element which detects the angle of rotation of said optical disk. Based on the angle of rotation of the truck of the optical disk for printing the literal notation of the arbitration obtained from the transliteration function part, and this truck, said optical head output-control section is characterized by printing the literal notation of arbitration on an optical disk front face by the optical head, while an angle-of-rotation detecting element detects an angle of rotation.

[0022] Moreover, the optical disk data eraser by this invention The optical head which irradiates the laser spot light of the configuration over two or more trucks at an optical disk, The carriage which moves this optical head to radial [of a disk], and the optical head output-control section which controls the output of this optical head, The transliteration function part which changes into the angle of rotation of an optical disk, and the output value of the laser spot light of an optical head the literal notation of the arbitration printed on the front face of said optical disk, the angle-of-rotation detecting element which detects the angle of rotation of said optical disk is prepared, and said optical head performs elimination or initialization of record film for the data which irradiated the laser spot light of the configuration over two or more trucks, and were recorded on the optical disk by the spiral truck of an optical disk -- both Said angle-of-rotation detecting element detects the angle of rotation of the rotating optical disk with a spindle motor. The angle of rotation of the truck of an optical disk for said optical head output-control section to print the literal notation of the arbitration obtained from the transliteration function part, and this truck to origin While an angle-of-rotation detecting element detects an angle of rotation, it is characterized by printing the literal notation of arbitration on an optical disk front face by the optical head.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing for explaining the optical disk side printing approach by 1 operation gestalt of this invention.

[Drawing 2] Drawing showing the outline configuration of the optical disk data eraser to which the optical disk side printing approach by this invention is applied.

[Drawing 3] It is a flow chart Fig. for explaining actuation of this optical disk data eraser, and is **.

[Description of Notations]

1: Laser spot width of face, 15 - 18: section qualitative change-of-state part, 22: base, 23: rotary encoder, 24: spindle motor, the direction of the diameter of 25:, 26: carriage, 27: linear motor, 28: linear scale, a 29: optical head, a 30: laser spot, 31: spindle control section, 32: carriage control section, 33: automatic focus control section, the 34: laser output-control section, 35: microprocessor, 36: transliteration function (section), 37 : high order controller.

[Translation done.]